62*Pro*

Mounter, Laminator and Encapsulator

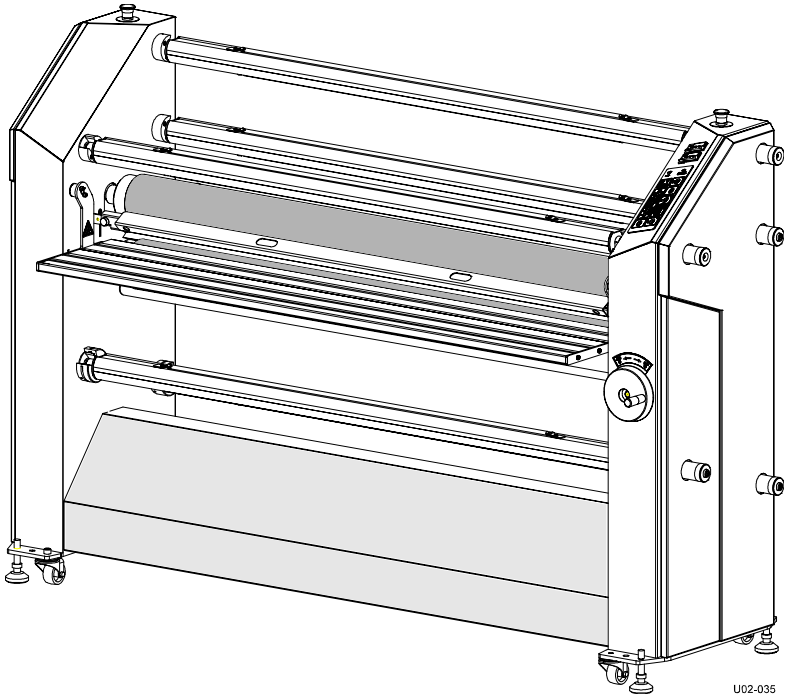
English

Français

Deutsch

Español

Italiano



User Manual

UM102EN, Rev.1.0
Jan.2003

INTRODUCTION

Thank you for purchasing your Seal 62*Pro*.

Maximum effort has been invested in the design of this machine to give you years of reliable service.

As you become familiar with your machine you will appreciate the high quality of its output and the excellence in engineering stated in its smartly styled design.

English

The machine described in this manual is a multi-functional machine that can perform the following processes;

- high-quality lamination,
- panel mounting of images,
- mounting and laminating in one pass,
- decaling,
- encapsulating images.

A vast number of laminating products are available. All of them with their own applications and processing specifications.

This manual gives a general description of various processes.

For more details on film choice and application solutions refer to the Seal films and adhesives product catalog

On this machine the process results can be controlled by:

- temperature setting (for upper and lower roller separately),
- speed setting,
- pressure setting,
- unwind tension of the film(s),
- use of pull rollers.

THIS MANUAL

This manual is intended for the user of the 62*Pro*. Read this manual carefully before starting the machine.

This manual contains important information for correct installation, operation and maintenance of the machine.

It also contains important instructions to prevent accidents, personal injury and/or serious damage prior to or during operation of the machine.

Familiarize yourself thoroughly with the functioning and operation of this machine and strictly observe the directions given.

If you have any questions or need further details on specific aspects related to this machine, please do not hesitate to contact us. The address and phone number are stated on the copyright page.

Chapter 1 will provide you with a summary of the manufacturers warranty information. It also describes the safety features installed on the machine and gives a number of safety instruction and warnings. **Read this chapter carefully**.

Chapter 2 provides a general description of the machine and of the process principles to help first time users to find their way on this machine.

Chapter 3 specifies the machine, machine dimensions and the dimensions of the materials to be used on this machine.

Chapter 4 guides you through the installation of the machine. This chapter also provides information for moving, transport and decommissioning of the machine.

Chapter 5 guides you through the operation in various processes to develop basic knowledge of the machine.

Chapter 6 provides maintenance procedures for long time efficient and trouble free operation of the machine. The trouble shooting section gives a number of sugestions in case the results are not up to expectation.

Chapter 7 is the glossary and explains a number of terms used in this manual.

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1. WARRANTY AND SAFETY INSTRUCTIONS

1.1 Warranty

The warranty period and conditions stated in this chapter are merely a summary of the general Seal warranty conditions.

For the exact details on the warranty period and conditions for your machine, please contact your dealer.

English

1.1.1 Warranty conditions

The manufacturer warrants to the original end user* that the machine when proven defective in materials or workmanship, within the applicable warranty period will be repaired, or (at our option) replaced without charge.

Note:
The main rollers and pull rollers are subject to normal wear and tear and therefore have warranty on material defects only.

The manufacturer or its representative shall not be liable for any damage caused by the machine nor loss of productivity.

Warranty is voided when:

- Changes or modifications are made to this machine, not explicitly approved by the manufacturer
- The machine is changed or modified by unauthorized persons.
- The machine is used under other than normal working conditions.
- The machine is used for purposes other than intended for (see page 3).

* The original end user is the person that first purchased the machine from the manufacturer or its representative.

1.1.2 Warranty period

The standard warranty period on this machine is one year from the date of purchase.

The main rollers and pull rollers have a warranty period of half a year on material defects only.

The warranty ends when:

- The periods stated above have expired.
- The machine changes possession.
- Warranty is voided by any of the conditions mentioned above.

1.2 Safety

This machine is provided with safety equipment to promote safe machine operation.

The manufacturer has done everything possible to prevent any possible danger and to inform you as accurately and comprehensively as possible of any hazards relating to the operation of the machine.

You should nevertheless proceed with caution when operating the machine.

Read the safety instructions below and familiarize yourself with the warning symbols summarized in the Warnings section.

1.2.1 Safety features

Emergency stops

The machine has 2 Emergency stops. When activated the Emergency stops switch off the power to the motor controller after the machine has come to a complete stop. The Emergency stops must be disengaged before a restart is possible.

Optical safety devices

The machine has an optical safety device at the input side of the nip at the main rollers. This device performs a check of the operation between transmitter and receiver.

When an error is detected (e.g. the signal is interrupted) the motor controller will be disabled and the motor will stop.

The stop signal from the optical device is overruled when:

- The machine is running in reverse direction,
- The slow mode has been activated and the footswitch is pressed.

Safety footswitch

The safety footswitch is used as remote control to start and stop the machine in the normal and the slow mode.

WARNING:

THE OPTICAL SAFETY DEVICE IS DISENGAGED WHEN USING THE SAFETY FOOTSWITCH IN SLOW MODE.
SO, KEEP CLEAR OF THE NIP WHEN PRESSING THE FOOTSWITCH, WHILE SLOW MODE IS ACTIVE.

The safety footswitch is protected with a safety lock to prevent accidental switching. Insert the forefoot completely to disengage this lock.

Slow mode

The slow mode is used when setting up the machine with new films or images.

In slow mode the machine is started with the footswitch and will then run at slow speed so that the operator has both hands free to position and feed new film or image correctly into the machine.

1.2.2 Safety instructions

Work safely!

The owner of the machine is responsible for safe operation of the machine. He therefore is obliged to familiarize operating personnel with the contents of this manual and make them aware of all possible hazards.

Do not change, remove or disable the safety facilities.

1.3 Warnings

1.3.1 General ESD-warning

WARNING:

DANGER OF ELECTRIC SHOCK BY ELECTROSTATIC DISCHARGE. PROCESSING FILMS THROUGH LAMINATING ROLLERS WILL CAUSE BUILD-UP OF ELECTROSTATIC CHARGES.

An anti-static floor coating and wearing anti-static clothing and footwear can reduce the risk of ESD-shock

1.3.2 In this manual

In this manual you will find 3 levels of warnings.

WARNING:

THE WARNING MESSAGE IS USED WHEN A LIFE-THREATENING SITUATION MAY ARISE OR PERSONAL INJURY CAN OCCUR. FOLLOW THE INSTRUCTIONS CLOSELY.

CAUTION:
The caution message is used when there is danger of damage to the machine or materials.
Follow the instructions to prevent this damage.

Note:
This message is used to give you useful information for easier operation, to prevent waste of material, etc..

1.3.3 On the machine

On the machine (See Figure 1) you will find the following warning symbols in black on a yellow background.

HOT OBJECTS (1)

DANGER OF GETTING BURN WOUNDS.
MAKE SURE NOT TO TOUCH THE UPPER MAIN ROLLER WHEN HEATED.

This symbol is placed on the inside side panel on both sides of the machine, just above the upper main roller, visible from the front and rear side. Also on the image guide at the input side of the nip and on the output nip safety bar (1).

ROTATING PARTS (2)

DANGER OF GETTING INJURED BY ROTATING PARTS.
MAKE SURE THAT THESE ROTATING PARTS DO NOT CATCH YOUR FINGERS, CLOTHING, HAIR, ETC.

This symbol is placed on in-feed table arms, on the cabinets just above and below the output table and on the pull roller safety bar (2).

ESD SHOCK (3)

DANGER OF GETTING AN ELECTRIC SHOCK CAUSED BY ELECTROSTATIC CHARGE BUILD-UP IN THIS AREA.

This symbol is placed on those places where electrostatic charges can be build-up. The output side of the machine and the output material are most likely building up charges. Therefore ESD-symbols are placed on the output nip and pull roller safety bars (3)

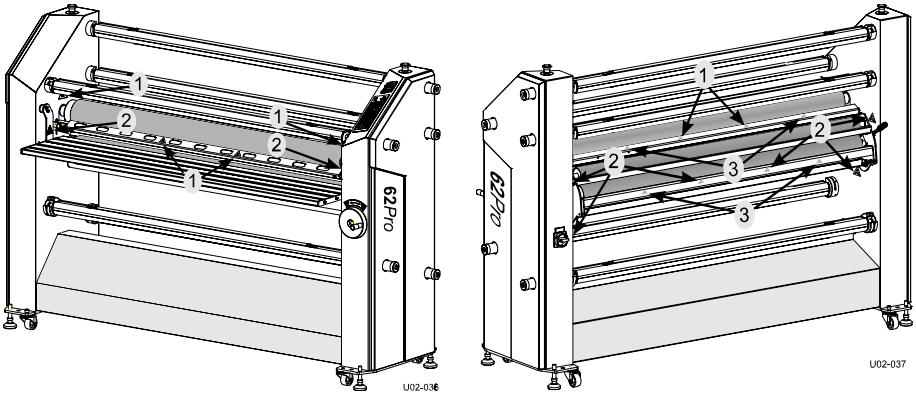


Figure 1: Warning symbol locations.

2 DESCRIPTION

This chapter describes the machine and its operating basics.

2.1 General description

The machine described in this manual is a mono-directional machine dedicated for processing pressure sensitive or heat activated materials.

While feeding through images and the coating films, the two silicone coated main rollers generate the pressure.

The area where the upper and lower main roller meet is called the “nip”. The upper main roller can be moved up or down manually, so the nip can be varied to feed materials of various thicknesses. A mechanical read-out shows the value set.

The nip setting hand wheel also sets the pressure for the laminating process.

The lower main roller is motor driven. The speed can be manually set between zero and a given maximum value.

Because both rollers are equipped with a heater, heat activated materials can also be processed with these rollers. Each roller has its own temperature control unit, so top and bottom roller temperature must be set separately.

In addition to the main rollers a pull roller set is provided to prevent warping of encapsulation results. (This set is not suited for cold lamination processes.)

An optional cooling device can be installed in front of the pull roller set. When both heaters are turned on, the cooling device will prevent the pull rollers from warming up too much and therefore prevents the encapsulation result from showing wrinkles

Five material shaft positions are standard on the machine. Three of these shaft positions can function as both an unwind or as a wind-up position, which makes the machine more flexible and enables roll to roll processing for some processes.

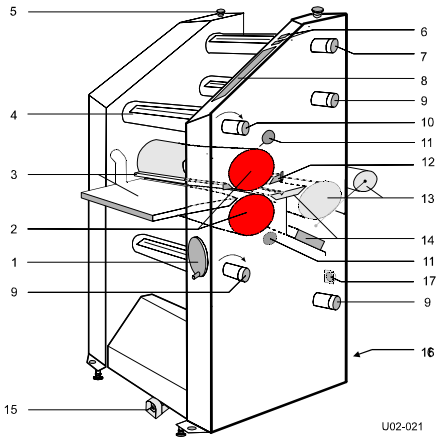
The machine can be divided into an upper and a lower section.

The upper section, above the in-feed table, consists of 3 auto-grip shaft positions and a splitter bar (idler).

The top shaft position is for unwinding film, the one on the front side for winding e.g. the release liner. The third shaft position is an unwind/wind-up position, which enables more flexibility in the use of this section.

The 2 shaft positions in the lower section are both unwind/wind-up positions, which gives maximum flexibility for this section.

2.2 Parts identification



1 Nip setting and pressure control wheel
2 Main rollers
3 In-feed table with image guide
4 Auto-grip shaft
5 Emergency button
6 Heater controls
7 Top unwind shaft
8 Control panel
9 Unwind/wind-up shaft
10 (Upper) wind-up shaft
11 Splitter bar
12 Nip safety bar with optional slitters
13 Pull rollers
14 Output table with optional cooling device
15 Foot switch
16 Identification label
17 Main power switch

Figure 2: Main parts identification.

Figure 3 shows the cross section of the layers in the decal process. In this process the largest number of layers is possible.

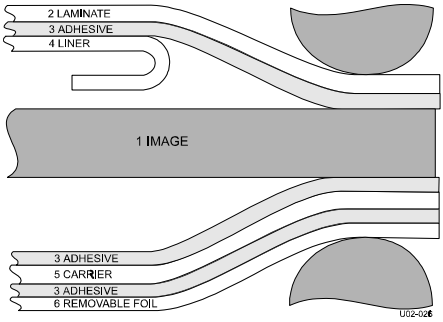


Figure 3: Cross section of layers, when making a decal.

Decaling in general is a cold process, where the bottom layer has no release liner. The removable foil (6 = release liner) is not removed during the decal process. The carrier (5) is not always present. In this case the removable foil (6) also functions as carrier.

The top layer is a normal pressure sensitive laminate, in this case with a release liner.

Heat sensitive laminates in general have no release liners (4), so they just consist of the laminate (2) with a heat activated adhesive layer (3).

2.3 Process principle

In all processes the materials are fed through the nip from the front side to be joined together by pressure and/or temperature.

A process that makes maximum use of the machine is shown in Figure 4. Shown is an image roll to roll process with a heat sensitive top and bottom layer.

The image that has to be coated on both sides is unwound from a roll on an unwind/wind-up shaft (1) and fed between the main rollers (2) via the in-feed table (3). The upper unwind/wind-up shaft (6) is set as a wind-up to roll up the finished product.

The top coating film is taken from a supply roll on the top unwind shaft (5). The bottom coating film is taken from a supply roll on the lower unwind/wind-up shaft (9).

When using a pressure sensitive laminate, it often has a release liner (as shown in the upper section) that has to be removed. It runs over a splitter bar (7) where the release liner is removed. This release liner is rolled up onto a cardboard core placed on the wind-up shaft (4) in the upper section.

When using a pressure sensitive laminate without a release liner, it must not run via the splitter bar to avoid getting adhesive residue on it.

The main rollers can be heated. The heat sensitive film is fed under the splitter bar providing maximum contact surface with the heated main rollers.

When encapsulating (hot sealing images), an additional set of pull rollers (8) is used to prevent wrinkles after cooling down.

When continuously encapsulating (roll to roll) the pull rollers would warm up slowly. To prevent this, an optional cooling unit can be installed. This cooling unit (10) keeps the bottom pull roller at room temperature, which in its turn absorbs the heat from the encapsulation result.

The optional slitters (11) can be used to cut off the edges when processing roll to roll.

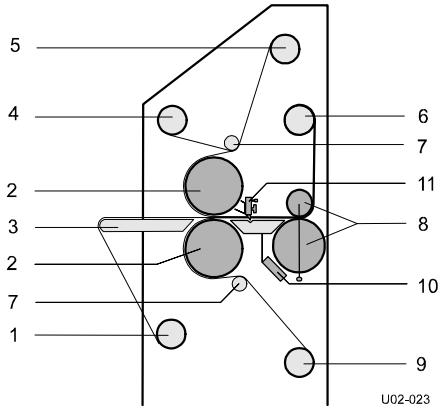


Figure 4: Creating Pop-up art, including image supply from roll.

3 SPECIFICATIONS

3.1 Identification

The machine identification label (example in Figure 5) is located at the bottom of the right-hand cabinet, on the rear side of the machine.

This label indicates the model (version) and the power supply requirements.

CAUTION:
The mains supply must match the values indicated on the machine identification label.

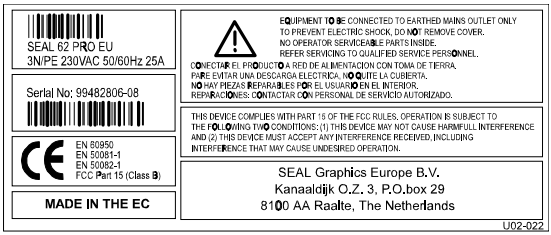

SEAL 62 PRO EU
3N/PE 230VAC 50/60Hz 25A
Serial No: 99482806-08
EN 60950
EN 50081-1
EN 50082-1
FCC Part 15 (Class B)
MADE IN THE EC
EQUIPMENT TO BE CONNECTED TO EARTHED MAINS OUTLET ONLY
TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER.
NO OPERATOR SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
CONECTAR EL PRODUCTO A RED DE ALIMENTACION CON TOMA DE TIERRA,
PARE EVITAR UNA DESCARGA ELECTRICA, NO QUITE LA CUBIERTA.
NO HAY PIEZAS REPARABLES POR EL USUARIO EN EL INTERIOR.
REPARACIONES: CONTACTAR CON PERSONAL DE SERVICIO AUTORIZADO.
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES, OPERATION IS SUBJECT TO
THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFULL INTERFERENCE
AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING
INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
SEAL Graphics Europe B.V.
Kanaaldijk O.Z. 3, P.O.box 29
8100 AA Raalte, The Netherlands
U02-022

Figure 5: Machine identification label (example).

3.2 Machine dimensions

	Metric		American	
3.2.1 Uncrated				
Width	222	cm	87.4	in.
Height	143	cm	56.3	in.
Depth (excl. in-feed table)	45	cm	17.7	in.
Depth (incl. in-feed table)	62	cm	24.4	in.
Working height	90	cm	35.4	in.
Weight	450	kg	994	lbs
3.2.2 Crated				
Width	228	cm	89.8	in.
Height	162	cm	63.8	in.
Depth	90	cm	35.4	in.
Weight	500	kg	1105	lbs
3.2.3 Working area				
Width	350	cm	140	in.
Depth	190 cm (75 in.) + 2x maximum board length			

Note:
Anti-static clothing and footwear of the operator and an anti-static floor coating will help reduce the build-up of electrostatic charges (ESD).
A relative humidity of at least 70% also helps reducing ESD-build-up.

3.3 Material specifications

	Metric		American	
Maximum width				
Process up to 50°C (122 °F)	1575	mm	62	in.
Process up to 125°C (257 °F)	1524	mm	60	in.
Maximum roll diameter				
Material unwind (top and upper unwind)	200	mm	8	in.
Material unwind (top unwind only)	305	mm	1	ft.
Material unwind (bottom unwind)	305	mm	1	ft.
Release liner wind-up	180	mm	6	in.
Maximum panel thickness	38	mm	1.5	in.
Roll core inside diameter	76.2	mm	3	in.

3.4 Machine specifications

Power supply

Europe	3N/PE 230VAC +/- 10%, 50/60Hz, 25A
USA	1N/PE 230VAC +/- 10%, 50/60Hz, 50A

For the correct supply voltage version refer to the identification label on the machine.

Standard number of shaft positions

Material unwind	1 (auto-grip)
Release liner wind-up	1 (auto-grip)
Unwind/wind-up	3 (auto-grip)

Optional features

Slitters
Extra plot unwind for 2” and 3” cores
Cooling device

Nip setting	0–40	mm	0 – 1 $^{9}/_{16}$	in.
Pressure	1–2.5	N/mm	5.71 – 14.28	lbf/in.
Process speed				
Maximum	6	m/min	20	ft/min
Slow mode	0.6	m/min	2	ft/min
Maximum roller temperature	140	°C	284	°F
Noise level	<70	dB(A)		

English

4 INSTALLATION

WARNING:
INSTALLATION MUST BE CARRIED OUT BY SKILLED PERSONNEL.

Note:
Make sure that the machine, in its final location, has adequate space. You will need room to feed, receive and trim images.

4.1 Unpacking

At delivery, the machine is packed in a plastic bag to avoid moisture penetration. It is transported in a carton box and is fastened onto a wooden pallet.

Note:
Unpacking the machine requires at least 2 persons.

The machine is equipped with castors that allow easy movement.

Place the pallet in a space where there is enough room to roll the machine off from the pallet (approx. 3x the length).

To unpack, follow the steps below (refer to Figure 7);

1. Cut the straps and lift off the carton box.
2. Remove the plastic bag.
3. Place the two ramps (4) against the roll-off side of the pallet so that the castors (5) will run clear from the edge.

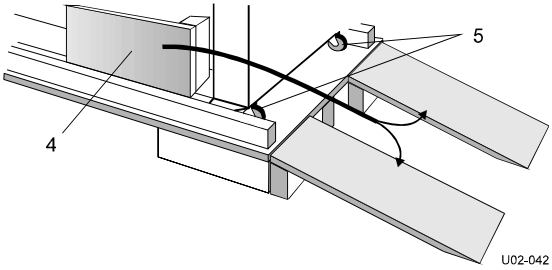


Figure 6: Ramp positioning.

4. Put all the loose accessories aside.

5. Remove the four securing bolts (1).
6. Turn down the four leveling feet (2) to lift the machine.
7. Remove the wooden blocks (3).

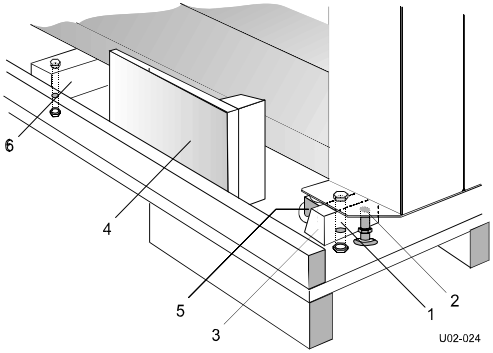


Figure 7: Removing transport parts.

8. Turn the support block (6) 90° to make room for the machine to pass by.
9. Turn up the four leveling feet (2) completely to put the machine on its castors (5).
10. Roll the machine off carefully from the pallet using the ramps.

WARNING:

ROLL THE MACHINE OFF WITH 2 PERSONS. IT IS HEAVY AND CAN NOT BE CONTROLLED ALONE.

Note:
Save all packing material for later moving over long distances or discard of according to local regulations.

4.2 Installation

1. Move the machine (and the accessories) to its final location.

Note:
Allow ample working space. See Figure 8.

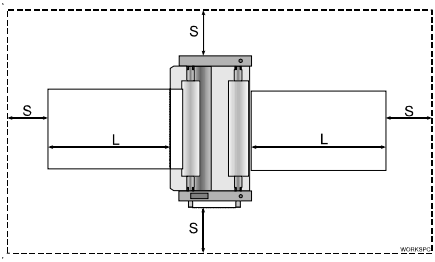


Figure 8: Working space.

L = Maximum board length, S = Minimum space 60 cm.

2. Turn down the four leveling feet until the castors are off the floor.

3. Remove all transport material.

- Cut the straps around the shaft suspensions and remove the foam pads.
- Cut the straps holding the in-feed table arms
- Cut the straps around the main roller axis and move up the top main roller to remove the transport blocks from the nip.
- Cut the straps holding the upper pull roller and open the pull rollers to remove the transport plates.

4. Put a spirit level on the upper main roller and level the machine by adjusting the four leveling feet.

CAUTION:
Check the mains values before connecting. See section 3.4 for power supply details

5. Connect the machine to the mains using the power cable supplied with the machine.

CAUTION:
Only if absolutely necessary, use an extension cable of ample capacity. Unroll the extension cable completely.

WARNING:

MAKE SURE THE POWER SUPPLY CABLE AND/OR THE EXTENSION CABLE IS NOT BLOCKING YOUR WAY AROUND THE MACHINE.

4.3 Transport

The machine can be transported on a smooth surface on its castors.

CAUTION:
Turn the leveling feet up completely to prevent them from bending or breaking if accidentally bumping into an obstacle.

On rough surfaces use a pallet truck or forklift.

When moving the machine over long distances, use original pallet and packing material and follow the unpacking procedure in the opposite way.

5 OPERATING

This chapter describes the function of the controls and indicators, the operating modes, how to set up and operate the machine and a number of applications.

5.1 Process controls

This section gives an overview of the functions of the controls on the control panel (Figure 9), the heater control (Figure 10) and elsewhere on the machine (Figure 11).

Note:
Switch on the heaters approximately 1 hour before use, if a process requires the rollers to be heated. Close the nip and let the machine run at low speed, to avoid uneven hot spots.

5.1.1 Control panel

This paragraph describes the controls and indicators on the control panel.

When LED's are blinking, this indicates an error. Refer to 5.1.4 for their meaning.

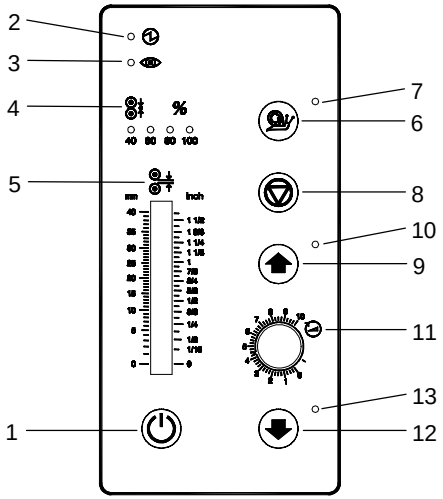


Figure 9: Control panel

Control ON/OFF (1), toggle pushbutton;
Press 1 second to switch the machine from stand by to active and back.

WARNING:

THE MACHINE IS CONSTANTLY POWERED WHEN THE POWER CORD IS PLUGGED IN AND THE MAIN POWER SWITCH IS TURNED TO ON.

Power indicator (2), LED;
The LED will light up when the machine is powered. It flashes when the machine is in stand-by mode.

Safety indicator (3), LED;
The LED will light up when the beam of the optical safety device at the input side of the nip is not interrupted.

Pressure indication (4), 4 LED's;
The LED's indicate the pressure setting of the main rollers. When 2 LED's light at the same time, they indicate the tens in between. See specifications for actual pressure range. All four LED's flashing indicates a pressure or nip setting error (see section 5.1.4).

NIP setting indication (5), Pointer;
This mechanism is directly coupled with the nip control and indicates the distance (nip) between the main rollers, set by the hand wheel.

Slow mode (6), toggle pushbutton;
Press 1 second to switch slow mode ON or OFF.
To run at the fixed slow mode speed the footswitch must be pressed.

CAUTION:
When slow mode is active the machine can still run at high speed.
Slow mode indication is NOT a speed indication. It is a working method.

Slow mode indicator (7), LED
The LED will light when slow mode is selected.

Stop (8), pushbutton;
Press to stop the rotation of the rolls.

Start (9), pushbutton;
Press to start the rotation of the rolls in the forward direction.

Forward indicator (10), LED;
The LED will light when the forward mode is selected.

Speed control (11), control knob;
Sets the speed anywhere in a range between 0 and 10 (See specifications for actual speed range).

Reverse (12), snap pushbutton;
Press and hold for rotation of the rolls in reverse direction.

Reverse indicator (13), LED;
The LED will light when the reverse mode is selected.

5.1.2 Heater control

The two heater-controls above the control panel are equal. The upper heater control regulates the temperature of the corresponding upper main roller. The lower heater control is for the bottom main roller heater.

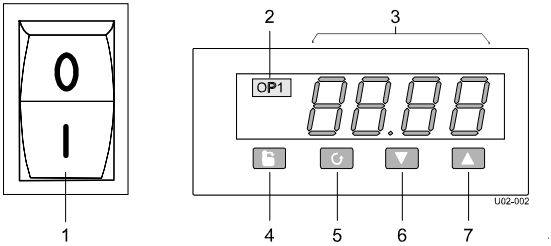


Figure 10: Heater-control section.

The heater (control) is turned ON and OFF by the 0/I switch (1). Press I to turn the heater ON. The actual temperature (3) is now displayed on the temperature control display.

The heater has a factory defined temperature range. Within this range the roller temperature can be regulated. The temperature setting is displayed when the up (7) or down (6) button is pressed, and changed by pressing the up (7) or down (6) buttons again.

If the actual temperature is lower than the set temperature, the heater element is turned ON and in the operation display position (2) OP1 is displayed.

Note:
The heated roller needs time to reach its set temperature (e.g. from room temperature to maximum takes approximately 1 hour). It is recommended to let the machine run at a low speed, to avoid uneven hot spots.

The buttons (4) and (5) are not used.

Cooling device (optional)

The optional cooling device is automatically switched ON when both heaters are turned on.

5.1.3 Additional controls

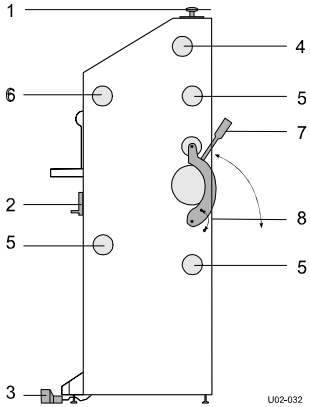


Figure 11: Additional controls

Emergency stop buttons (1), push and hold button;

When pressed the rotation of the rolls is stopped immediately and the button is locked into this stop position.

Turn the button to unlock it.

Pressing start, reverse or pressing the footswitch starts the process again.

Nip setting wheel (2), geared wheel;

Turn the wheel clockwise to narrow (close) the nip or

counter-clockwise to widen (open) the nip.

When both rollers touch the materials, the pressure is set. By turning the wheel clockwise the pressure is increased. Turning the nip setting wheel counter-clockwise the pressure will decrease.

The nip setting and the pressure are indicated on the control panel.

Foot switch (3), snap switch;

Press and hold the switch to start the rotation of the rolls. Insert the forefoot completely to disable the safety lock that prevents accidental starting.

When the switch is released, the rotation of the rolls will stop.

Unwind tension control (4), knob;

By turning this knob clockwise an amount of friction is set between the shaft and the frame, so this will act as a brake.

Tightening the brake will apply more tension to the material on the shaft.

Turning the knob counter-clockwise will release the brake and therefore release the tension.

English

Unwind/wind-up tension control (5), knob;

By turning this knob clockwise an amount of friction is set between the shaft and the frame, so this will act as a unwind brake.

Turning the knob counter-clockwise will release the brake.

Turning the knob further counter-clockwise will set an amount of friction between the shaft and the driving sprocket wheel, so this will act as a coupling between motor and shaft. The shaft will now act as a wind-up shaft.

Turning the knob clockwise will release the wind-up shaft again.

Wind-up tension control (6), knob;

By turning this knob clockwise an amount of friction is set between the shaft and the driving sprocket wheel, so this will act as a coupling between motor and wind-up shaft.

To release the tension, turn the knob counter-clockwise.

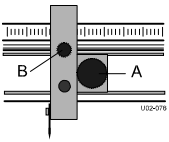
Pull roller handle (7);

Handle to lever the top pull roller into position.

Pull roller locking knob (8);

Snap-lock (right-hand side, seen from the rear of the machine) to lock the top pull roller into position.

Slitters (9) (optional)



Slitters are used to cut off the edges from the laminating result when processing roll to roll.

The knob A locks the slitter into its horizontal position.

The knob B locks the vertical position of the slitter-knife (up is disengaged, down is engaged)

The relative position can be read from the ruler above the slitter-rail.

Figure 12: Slitter controls

Main power switch (10)

Rotary switch to switch the mains supply to the machine ON or OFF.

The switch can be locked in the OFF position with a padlock.

5.1.4 Error indications

When an error is detected, one or more LED's are flashing and any rotation will stop.

Power indicator flashing;

Machine is in stand-by mode. The power is on and the optical safety device is active.

Press the control ON/OFF button to activate the machine.

Forward indication flashing;

Motor overload.

Press the stop button and check the material flow and the tension setting of the unwind shafts.

Reverse indicator flashing;

Motor overload.

Press the stop button and check the material flow and the tension setting of the wind-up shafts.

Forward and reverse indicator flashing;

System error.

Disconnect and then reconnect the power. If the error persists, contact your service organization.

All four pressure indication LED's are flashing;

Pressure too high or nip setting too narrow.

The LED's start flashing at 10% overload. When the pressure exceeds a 20% overload an audible signal is generated. Increase the nip to lower the pressure.

5.2 Operating modes

The machine is either in normal mode, or slow mode. In both normal and slow mode the rollers can rotate in forward or in reverse direction.

5.2.1 Normal forward mode

Normal forward mode can be activated from standstill when slow mode is not active.

The rotation speed of the rollers in normal mode is set via the speed control knob.

Rotation is started when the start button is pressed and stopped when the stop button is pressed.

When the footswitch is pressed, operation control is taken over by the footswitch and the rollers will rotate forward until the footswitch is released.

To return control to the control panel without stopping;

- press and hold the start button,
- release the footswitch
- and then release the start button.

An interruption of the light beam of the optical safety device will stop the rotation of the rollers.

After the interruption is removed, press the start button to continue the process.

5.2.2 Reverse mode

Reverse roller rotation can only be started from stand still by pressing the reverse button.

CAUTION:
The unwind shafts will not rewind the material, they are not motor driven.

Rotation is stopped when the reverse button is pressed again.

WARNING:

KEEP CLEAR OF THE REAR SIDE NIP WHEN RUNNING IN REVERSE MODE.

When running in reverse, the optical safety device (at the front side nip) is disabled.

In Normal mode the speed is determined by the speed control. In slow mode the speed is fixed at slow mode speed.

5.2.3 Slow mode

Slow mode is entered and left by pressing the slow mode button for 1 second. Selection is indicated by the slow mode indication LED.

When selecting slow mode from normal forward mode, the speed (normal speed) will not change until the footswitch is pressed.

Normal speed

Normal speed in slow mode is still determined by the speed control setting.

Switching between normal speed and standstill is done by the start and the stop button.

Slow mode speed

Slow mode speed is a fixed low speed (see specifications) independent from the speed control. Slow mode speed can only be selected in slow mode by pressing and holding the footswitch.

WARNING:

KEEP CLEAR OF THE NIP WHEN RUNNING IN SLOW FORWARD MODE.

When running at slow mode speed, the optical safety device is disabled.

When the footswitch is released, the forward rotation is stopped.

Changing to normal speed

To change from slow mode speed to normal speed without stopping, press and hold the start button, release the footswitch and then release the start button.

Note:
Changing to normal speed will not deactivate slow mode.

Pressing the footswitch again will slow down rotation to slow mode speed again.

English

5.3 Placing film rolls

5.3.1 Auto-grip shafts

All shafts are the same. Their function is determined by their position in the machine.

The shafts fit into the machine in both ways.

On the control panel side of the machine the shaft and the suspension snap together by a gripper slot and gripper.

At the left-hand side of the machine the shaft has a thrust piece in the suspension. This thrust piece pushes the shaft into locking position when the shaft is turned.

To position the shaft correctly push it firmly into the suspensions and turn the shaft until it locks in.

Check the auto-grip mechanism on each shaft. The rubber cords should just touch the edges of the recess (Figure 13A: d = 8 ± 2.5 mm).

If not, see chapter 6 Maintenance.

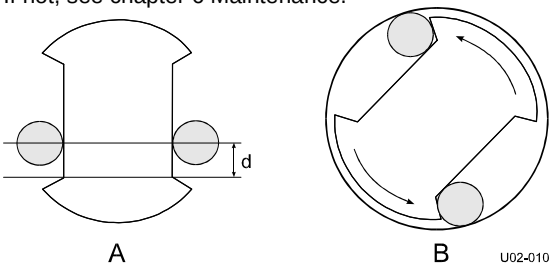


Figure 13: Auto-grip shaft

When the shaft is rotated inside a cylinder, the rubber cord will move to the side and gets caught between shaft and cylinder (Figure 13B). Rotating back will release the cord.

5.3.2 Use of films with release liner

When using a film with a release liner that must be removed, load the wind-up shaft with a scrap core (empty cardboard cylinder) of (at least) the same width as the film.

1. Take the auto-grip shaft from the wind-up position of the machine.
2. Place the scrap core on the shaft, holding the shaft as in Figure 14.

CAUTION:
Do not drop the end of the shaft on the floor.

3. Put the shaft with cylinder back into the machine.
4. Push both sides of the shaft firmly into their suspensions.
5. Turn the shaft until the grippers lock in.

5.3.3 Loading shaft with film rolls

The film roll is put on the shaft depending on the type of film and the use in the upper or lower section of the machine.

In general film with release liner is rolled up with the liner (and adhesive) to the outside, whereas film without release liner has its adhesive layer to the inside of the roll.

- In the upper section, the (adhesive) side in contact with the image must be on the top when unwinding the film to the front of the machine.
- In the lower section, the (adhesive) side in contact with the image must be on the bottom when unwinding the film to the front of the machine.

1. Put the film roll on a flat surface with enough space on one side to insert the shaft.
2. Take the auto-grip shaft from the unwind position of the machine.
3. Insert the shaft into the core cylinder of the film roll, holding the auto-grip shaft as in Figure 14.

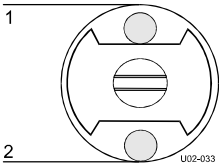


Figure 14: Auto-grip shaft position.

4. Place the shaft with the film roll in the correct way back into its suspensions (see Figure 14).

Unwind direction of film towards the front of the machine:

in the upper section:

- film with release liner on the outside unwinds from the top (1)
- film with release liner on the inside unwinds from the bottom (2)
- film without release liner unwinds from the bottom (2)

in the lower section:

- film with release liner on the outside unwinds from the bottom (2)
- film with release liner on the inside unwinds from the top (1)
- film without release liner unwinds from the top (1)

5. Push both sides of the shaft firmly into their suspensions.
6. Turn the shaft until the grippers lock in.
7. Position the film and the scrap core in the middle and align them.

Note:
When both upper and lower section are used, place both films at exactly the same position.

8. Make sure the films (and scrap cores) are set up and aligned properly.

5.3.4 Presetting the tension

To enable the film to unwind without wrinkles a momentum (brake or tension) can be set to the roll.

On the right-hand side of the machine you will find tension control knobs, corresponding with each shaft.

Turn the tension control knob clockwise to set the tension or counter clockwise to release the tension.

> **Note:**
> The unwind/wind-up shafts have a split tension setting: Turn clockwise for unwind tension and counter clockwise to release the unwind tension. Turning further counter clockwise will set wind-up tension (see also section 5.1.3).

When the film is webbed, it is recommended to set a low tension to each shaft by turning the knob clockwise until you feel some resistance.

On the unwind shaft this will prevent film to unwind without tension. On the motor-driven wind-up shaft it allows the shaft to slip and adapt its rotation speed to the speed of the film.

5.3.5 Pressure setting

Thin images

When processing thin images (thickness same as or less than the film) pressure is preset when the upper and lower material is webbed.

During processing the pressure can be adjusted. The best pressure setting for thin films is about 80%.

Panels

When processing panels, a leader panel is used to preset the pressure.

Use a leader panel of the same material, thickness and width as the panels to process.

1. Set the nip to the thickness of the panel.
2. Feed the panel into the nip in slow mode.
3. Set the pressure to approximately 80% for full-width panels.

> **CAUTION:**
> **For narrower panels set the pressure proportional to the width between 40% and 80%. E.g. half width equals 60%.**

4. Push the reverse button to run the panel back through the machine.

5.4 Webbing

For most processes the machine must be webbed before images on thin film or on panels can be processed. The machine can be webbed for single sided or double sided processing.

> **Note:**
> In single sided processes adhesive residues will stay behind on the bottom roller where the film is wider than the images. To prevent this, a release liner of the same width as the top film can be used in the bottom section. The release liner can easily be removed later on.

When webbing a film with a release liner, the film is always fed over a splitter bar (or idler), where the release liner is separated from the film.

To increase contact surface with the heated main roller, heat sensitive film also runs via this idler (splitter bar).

In this section an unwind (or wind-up) roll can also be an unwind/wind-up shaft position set as unwind (or wind-up).

To feed in the films a leader panel is needed of the same thickness as the panels to process. For processing thin images a leader panel is provided. When this panel is through, the nip is set to zero and the images can be fed.

5.4.1 Upper section only

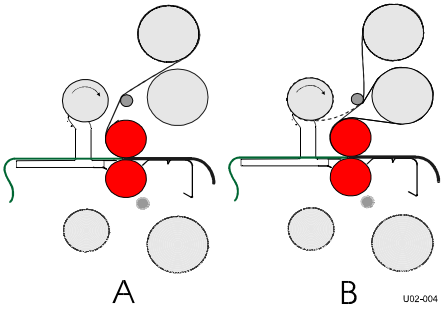


Figure 15: Webbing upper section.

1. Remove the image guide.
2. Unwind the film from the upper or top unwind roll.
   - Feed a pressure sensitive film (without release liner) from the top unwind roll over the splitter bar (A).
   - Feed all other films underneath the splitter bar (B).

3. Pull the film forward until approximately 10 cm (4 in.) is on the in-feed table.

   If the film has a release liner:

   - Peel off the release liner.
   - Pull the release liner up and stick it to the scrap core on the wind-up shaft.
4. Stick the leader panel to the film.
5. Feed the panel into the nip using slow mode.
6. Refit the image guide.
7. Stick the front end of the image to the leader panel or butt up the next panel

During processing:

- Check and adjust the tension on the unwind- and wind-up shafts.
- Check and adjust the pressure setting while feeding through the leader board and images.
- Now speed can be set to normal.

5.4.2 Upper and lower section

A leader panel is needed of the same thickness as the images or panels to process.

For thin images use the leader panel provided

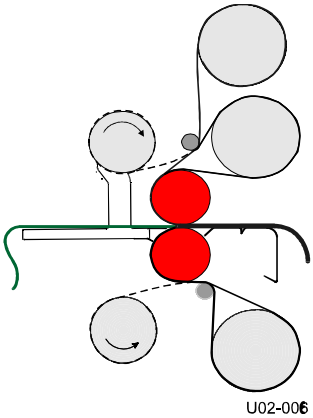


Figure 16: Upper and lower section webbed.

The film in the upper section is webbed first

1. Remove the image guide.
2. Feed the film underneath the splitter bar (between splitter bar and upper roller)
   - Pressure sensitive film (without a release liner) from the top unwind shaft must be fed over the splitter bar.
3. Pull the film forward until it almost reaches the in-feed table and apply it to the upper roller

   If the film has a release liner:

   - Peel off the release liner
   - Pull it up and stick it onto the cylinder on the wind-up shaft.

Now web the lower section

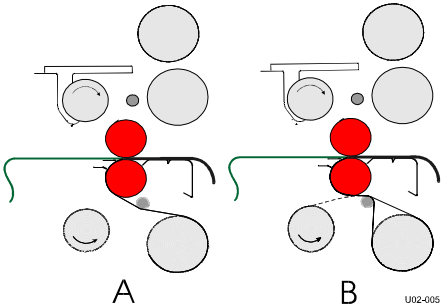


Figure 17: Webbing lower section.

4. Lift the in-feed table and put it in the upper position.
5. Unwind the film from the lower unwind roll.
   - Feed a pressure sensitive film without release liner underneath the splitter bar (A).
   - Feed all other films over the splitter bar (B).
6. Pull the film forward until the end reaches above the nip and stick it to the film from the upper section.

   If the film has a release liner:
   - Peel off the release liner.
   - Pull it underneath the wind-up shaft.
   - Stick it from below onto the cylinder on the wind-up shaft.
7. Lower the in-feed table.

   When encapsulating:
   - Set the top pull roller in the upper position and lock it on both sides.
8. Push the films with a leader panel into the nip using slow mode.

   Note:
   Use a leader panel of the same material, thickness and width as the panels to process. When encapsulating it is recommended to use the provided release board as a leader.

9. Stick the front end of the image to the leader panel, or butt up the next panel.
10. When the leader panel is through the nip, set the pressure for optimum result.
11. Refit the image guide

While feeding the images:
- Check and adjust the tension on the unwind- and wind-up shafts.
- Check and adjust the pressure setting.
- Now speed can be set to normal.

English

5.4.3 Roll to roll

When webbing for an image roll to roll process, the lower front unwind/wind-up shaft is used as a supply (unwind) shaft for the images.

Single sided lamination;

When laminating single sided the unwind/windup shaft in the rear of the lower section can be used to wind-up the completed product (Figure 18, A).

> **Note:**
> To prevent adhesive residues from staying behind on the bottom roller use a release liner in the bottom section and follow the double sided lamination process. The release liner can easily be removed later on.

Double sided lamination;

The unwind/wind-up shaft in the rear of the upper section is used to wind-up the processed images (Figure 18, B).

This means the top laminate (with or without release liner) must be webbed on the top unwind shaft in the upper section and in the lower section only a laminate without a release liner can be used.

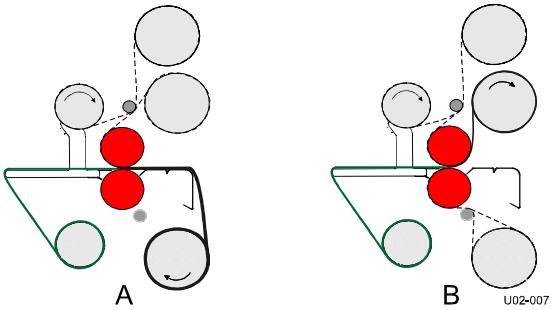


Figure 18: Webbing image from roll to roll.

The laminates are webbed first;

1. Web the upper and lower section laminates as described in the previous sections.
2. Feed the films with a leader board through the nip.
3. When the leader panel is through the nip, cut off the leader panel.
4. Stick the leading edge of the films at the rear side of the machine onto the cylinder on the wind-up shaft.
5. Set the tension control for this shaft to wind-up tension.
6. Set the nip to zero (no pressure).
7. Pull the image to the front and feed it over the in-feed table into the nip.

Unloading

When the image roll is empty and through the nip, cut the films at approximately the same length and let the machine run until the end is through the nip.

5.4.4 Pull rollers

The pull rollers are generally used in the encapsulation process (hot processing double sided lamination) to get a better encapsulation result.

- Before webbing set the top pull roller in the upper position and lock it on both sides.
- Webbing is the same as described before, accept the films are now, with a leader board, pushed through the main roller nip and the pull roller nip.

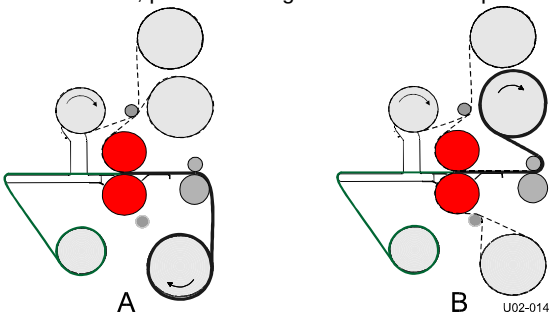


Figure 19: Roll to roll with pull rollers engaged.

5.5 Processes and settings

5.5.1 Mounting images or decals

In this process the machine is not webbed with film.

- When mounting images onto a (pre-coated) board (B), the adhesive is on the mounting side of the board.
- When mounting decals (A), the adhesive is on the back of the image.

The mounting process is equal for both.

1. Remove the shafts from the upper section.
2. Preset the nip and the pressure (see section 5.3.4).
3. Put the board on the in-feed table.

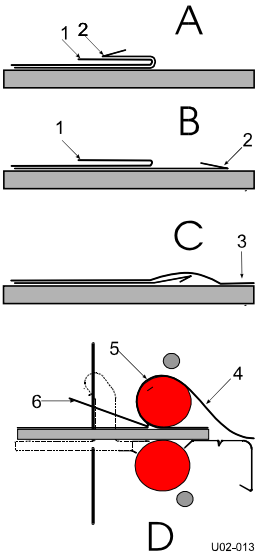


Figure 20: Mounting images or decals

4. Put the image on top of the board (image side up). Turn back the image at the machine side (1).
5. Turn back approx. 25 mm (10 in.) release liner (2) at the machine side and crease this evenly from the inside out.

Note:
The final quality depends on the way in which the leading edge of the image is applied to the board.

6. Apply the image to the board (3).
7. Insert the edge with the image adhered to into the nip.
8. Lay the loose end of the image smoothly over the upper roller (4).

Note:
Use the footswitch to start/stop in slow mode, keeping your hands free.

WARNING:

KEEP YOUR FINGERS CLEAR OF THE NIP. THE OPTICAL SAFETY DEVICE IS NOT FUNCTIONING IN SLOW MODE.

9. With your left hand - peel back the release liner (6) from the image or board as it is slowly fed into the nip one section at a time, without stopping.

Note:
Removing the release liner completely exposes the adhesive to dirt and dust that will get trapped under the image.

10. With your right hand - keep the image smooth against the upper roller (5), preventing the image from wrinkling.

Note:
For the best result; do not stop while feeding an image.

5.5.2 Pre-coating panels

This process is used to coat boards (substrates) with a pressure sensitive mounting film onto which images can be mounted. This process can also be used to create a carrier board.

Note:
The mounting film is usually provided with one release liner.
Place the film and web it as if it has no release liner, over the splitter bar.

1. Place the roll of mounting film on the shaft of the upper unwind position.
2. Set the nip to correspond to the thickness of the panels to be processed.
3. Web the film using a leader board of the same material, thickness and width.
4. Set the pressure while feeding the leader board.
5. Before the end of the leader board enters the nip, butt up the panel to be pre-coated.

When more panels have to be pre-coated feed them in continuously without any gap.

At the end, use a leader board again to finish. This prevents the adhesive from touching the bottom roller.

6. Butt up and feed the last leader board until the previous panel is out of the nip.

CAUTION:
Do not cut film close to or on the rollers. This will damage the silicone coating of the rollers and will void the warranty.

7. Cut this panel free.

8. Back-up the leader board using the reverse.

9. Cut the film using a blade cutter.

After removing the release liner from the pressure sensitive mounting film, the board has an adhesive coating ready to mount an image. See section 5.5.1 for mounting images.

5.5.3 Single-sided lamination

Images are laminated single-sided using carrier (or release) boards. This laminate can be a heat sensitive laminate or a pressure sensitive adhesive with release liner.

- The image is put on the carrier board with the image side up.
- All steps in this process are the same as when pre-coating a board (section 5.5.2).

5.5.4 Double-sided lamination

Encapsulating images with cold laminates is called double-sided lamination (and is normally not done with panels).

1. Load and web laminating film in the upper and the lower section.

2. Stick a leader board to the films and feed it through the nip.

3. When the leader board is completely out of the nip, lower the upper roller onto the bottom roller (nip setting = 0).

4. Now feed the images into the nip, allowing a gap between them.

5. Cut the film with the blade cutter when the images are clear of the rollers.

To unload the machine:

6. Cut both films along the splitter bar using an enclosed blade cutter.

7. Open up the nip and remove the film between the rollers.

5.5.5 Encapsulation

Encapsulation is the term for sealing an image with heat sensitive laminates on both sides.

Note:
The heated rollers need time to reach their set temperature (e.g. from room temperature to maximum takes approximately 1 hour). It is recommended to let the machine run at low speed, to avoid uneven hot spots.

- Switch ON both heaters, set the temperatures (see the specifications of the materials used) and allow ample time to reach the set temperature.
- Set the upper pull roller in the upper position before webbing and lock it in position.

- The procedure is the same as the double-sided lamination above (section 5.5.4).

5.5.6 Over-lamination

After an image is mounted to a panel, a protective laminate can be applied. This over-laminate can be a heat sensitive laminate or a pressure sensitive adhesive with release liner.

- This process is the same as to pre-coating a board (section 5.5.2).

5.5.7 Decaling

When decaling, a laminate is put over the image side and an adhesive backing is put on the backside of the image.

- The process is the same as double-sided lamination (section 5.5.4).

This decal can later be mounted onto a panel or other substrate.

6 MAINTENANCE

6.1 Cleaning

The machine has to be cleaned regularly. Dirt and dust will have a negative influence on the result of the lamination processes.

CAUTION:
Do not use abrasive materials for cleaning the machine. This can damage the painted surfaces or the silicone covering of the rollers.

Use a damp cloth for cleaning.

CAUTION:
Make sure water does not run into any of the cabinets. This can damage the electrical circuits when power is applied.

Clean the exterior of the machine with a damp cloth as needed. If necessary, use a household-cleaning solution to remove difficult marks.

Clean the shafts and the rubber cords on it as required.

6.1.1 Cleaning the silicone covered rollers.

The rollers must be cleaned regularly to prevent a build-up of adhesive residue. This may eventually damage the rollers.

Use a damp lint-free cloth to remove dust and other dirt.

Use a silicon-cleaning block to remove the adhesive stains from the rollers.

Note:
Adhesive is easier to remove when the rollers are hot.

Put a waste panel between the rollers when cleaning the upper roller, to prevent adhesive remnants from falling onto the lower roller.

WARNING:

MAKE SURE THE ROLLERS ARE COLD WHEN USING ALCOHOL FOR CLEANING. ISOPROPYL ALCOHOL IS VERY EASY FLAMMABLE.

Difficult stains can be removed with the aid of isopropyl alcohol (IPA) and a clean lint-free cloth.

Do not pour isopropyl alcohol directly on the machine.

6.2 Preventive maintenance

Our machines are designed in such way that they need little (preventive) maintenance in addition to the cleaning.

The following checks have to be performed:

- Auto-grip shafts with blocking cords.

6.2.1 Auto-grip shafts

Check the auto-grip mechanism on each shaft.

- The distance (d) between the rubber cords and the edges of the recess should be 8 ± 2.5 mm minimum (the cord must not touch the skew).

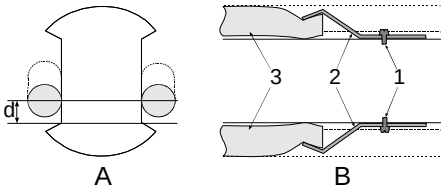


Figure 21: Auto-grip shaft

If not, correct as follows:

- Loosen the clamp (2) with the screw (1) until the cord is free on one side.
- Shorten the cord by approximately 10 mm (4 in.).
- Put the end of the cord back underneath the clamp (2).
- Secure it by tightening the screw (1)

6.3 Trouble shooting

During processing wrinkles can show up in the image (1) on the in-feed table (2) and in the process result (4) on the output table.

The figures below show some examples where it is caused by the main rollers (3) or the pull rollers (5), and gives a possible solution.

Wait until a few meters is processed to see results.

Pressure too high.

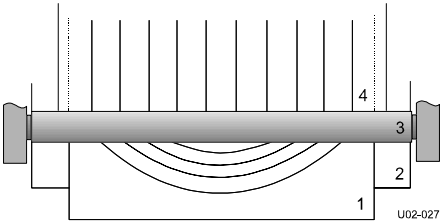


Figure 22: Wrinkles due to high pressure.

- Decrease the roller pressure a little (5-10%).

Pressure too low.

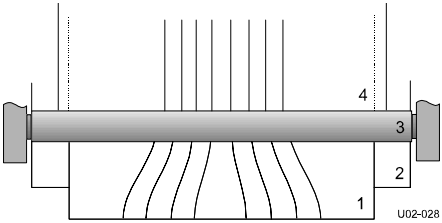


Figure 23: Wrinkles due to low pressure.

- Increase the roller pressure a little (5-10%).

Unwind tension too low.

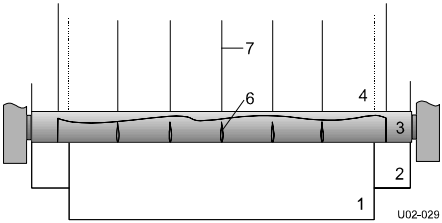
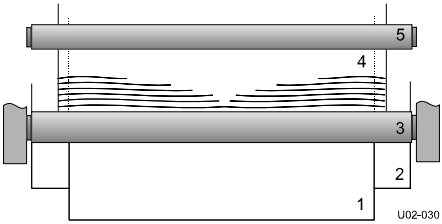


Figure 24: Wrinkles due to low unwind tension.

- Increase the unwind tension until the wrinkles (6) in the film on the roller disappear. The lines (7) in the process result will disappear as well.



Pull tension too low.

Figure 25: Wrinkles due to low pull tension

- This is a machine adjustment error. Contact your dealer and ask for technical assistance.

Too much heat in the final result

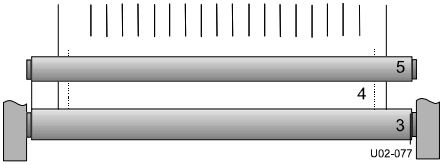


Figure 26: Wrinkles due to too much heat.

The result is still too hot after the pull rollers. The bottom pull roller also gets hot.

- Reduce the heater settings.
- Check the function of the optional cooling device or have the device installed.

Roller alignment fault.

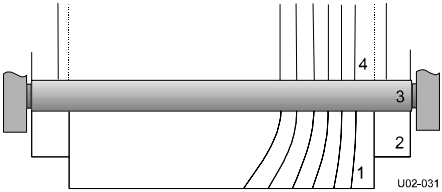


Figure 27: Wrinkles due to faulty roller alignment.

The wrinkles occur on one side only (left or right).

- This is a machine adjustment error. Contact your dealer and ask for technical assistance.

Material rolls are jumping.

A regular tick can be heard in the shaft suspension.

- Adjust the shaft support (1) by turning up or down the screw (2) with an Allenkey.

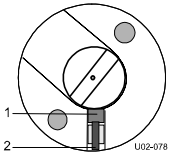


Figure 28: Shaft support adjustment.

6.4 Technical assistance

For technical assistance you can contact your dealer or the address on the copyright page in the front of this manual.

Make a clear description of the problem before contacting technical assistance.

Please keep the type and serial number of your machine at hand.

You can find this data on the identification plate of your machine, which can be found on the rear side of the right cabinet.

7 GLOSSARY

Carrier board or sled
A board with a non-stick surface that is used when laminating one side of an image only.

Decal
An image with an adhesive backside (Am.: Sticker).

Decaling
Providing an image with laminate on the image side and adhesive on the backside.

Encapsulating
Sandwiching an image between two heat sensitive films .

Laminate
A thin film of clear material to be permanently affixed onto an image.

Laminating
Providing an image with a thin film of clear material.

Leader panel
A piece of stiff cardboard or foam used to lead film into the nip of the main rollers. In addition it is used when pre-coating to prevent adhesive getting onto the rollers.

Main rollers
A set of two silicone coated rollers that perform the actual process.

Mounting
Permanently affixing an image onto a backing board.

Mounting film
Adhesive backing to make an image self-adhesive. On the side that is in contact with the image the carrier has an adhesive with or without release liner. The carrier can function as release liner or be supplied with a second (cold) adhesive layer and release liner.

Nip
The area where the top and bottom main rollers meet is called the nip.

Pre-coating
Coating a substrate with an adhesive mounting film onto which an image can be mounted.

Pull rollers
Set of rollers used in the encapsulation process to stretch the process result in order to avoid warping.

Release liner
Backing film protecting the adhesive layer of a laminate or mounting film. Once the release liner is removed, the adhesive layer becomes exposed.

Roll
A (shaft with a) cylinder loaded with film or release liner.

Roller
One part of the main element in the machine that performs the actual process (see main rollers).

Scrap core
An empty cardboard cylinder left over when all material on a roll is used.

Webbing
Loading the machine with film, so that the machine is ready for processing.